

MINERALOGICAL ABSTRACTS

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The sixteenth volume of MINERALOGICAL ABSTRACTS contains 5,579 abstracts and citations of papers and also notices of 8 bibliographies and 118 books. The abstracts are grouped under the seventeen headings:—

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The Index to volume 16 which is contained in the present number—No. 8, December 1964—is in two parts: an Author Index (pp. 675–729), and a Subject Index (pp. 731–792) which includes typographical references. The British Standards system is the preferred form for the transliteration of Cyrillic names. If the name given in the abstract is markedly different from this, it is cross-referenced in the Index.

During the issue of volume 16, it was decided to omit full references in Cyrillic characters except in the case of new minerals, for which the reference is still quoted in the script of the original paper or of the paper cited as the authority.

Place-names are, in general, in the form used in the Columbia-Lippincott Gazetteer of the World (1952); alternative forms are given on occasion. Geographical abbreviations used are: Co. County; Is. Island; L. Lake, Loch (Scotland), Lough (Ireland); Mt(s). Mountain(s); R. River.

The Index has been prepared by Dr. O. Bradley, with the assistance of Mrs. E. Sheffield.

Grateful thanks are offered to the ladies and gentlemen who have obliged us by notices of errors in volume 16 and in preceding volumes of MINERALOGICAL ABSTRACTS.

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ERRATA AND ADDENDA

(L, M, R indicate left, middle, right column ;

* indicates counted from the bottom.)

Mineralogical Abstracts, vol. 11.	
PAGE	LINE
325R	36
<i>For Stanton read Staunton</i>	
<i>Mineralogical Abstracts, vol. 12.</i>	
344	6*
<i>For HOLYE (W.) read HOLYK (W.)</i>	
382M	32*
<i>For Cushion read Cashion</i>	
—	15*
<i>For Hallingsberg read Hallingeberg</i>	
382R	24
<i>For Krasnyi Klych read Krasnyi Klyuch</i>	
<i>Mineralogical Abstracts, vol. 13.</i>	
700R	19 }
770R	3 }
<i>For Kotni R. read Kotui R.</i>	
726L	26*
<i>For andalusite read andalusite</i>	
776R	8*
<i>For Territories read Territory</i>	
782R	30*
<i>For Neon read Noen</i>	
—	27*
<i>For Zavnetoe read Zavetnoe</i>	
789L	28*
<i>For Nigliite read Niggliite</i>	
830L	3
<i>For line read lime</i>	
<i>Mineralogical Abstracts, vol. 14.</i>	
23L	15*
<i>For P₂^A read P₄¹</i>	
129R	5*, 7*
<i>For Adzhi-Bogdo I (Аджь-Богдо) read Adzhi-Bogdo I (Аджь-Богдо)</i>	
326R	18*
<i>For P₂/c-C₂^{5h} read P₂/c-C_{2h}⁵</i>	
498R	8*
<i>For M.A. 7-166 read M.A. 9-166</i>	
580M	24*, 25*
<i>For Alzhi-Bogdo I & II read Adzhi-Bogdo I & II</i>	
—	18*
<i>For Breitsheid read Breitscheid</i>	
—	17*
<i>For Ogg read Ozren</i>	
<i>Mineralogical Abstracts, vol. 15.</i>	
480R	28
<i>Delete hyphen from all-feldspathoidal</i>	
625R	28*
<i>For with read with</i>	
632M	36
<i>For Fizélite read Fizélyite</i>	
640L	6
<i>For Izu-Hakoen read Izu-Hakone</i>	
646M	14
<i>For Benegó read Bendegó</i>	
—	27
<i>For Ingast read Igast</i>	
<i>Mineralogical Abstracts, vol. 16.</i>	
3R	10
<i>For KOCK read KOCH</i>	
14L	5
<i>For Spectrochemical read X-ray spectrochemical</i>	
32R	19*
<i>For TAHIRKHELI (KHAN, S. A.) read TAHIRKHELI (R. A. KHAN)</i>	
32R	12*
<i>For TAHIRKHELI (KHAN, R. A.) read TAHIRKHELI (R. A. KHAN)</i>	
36L	16*
36R	—
<i>For IMAM (A. S.) read IMAM (S. A.)</i>	
39L	13
<i>For Urnaium read Uranium</i>	
51R	5*
<i>For SUGIMURO (YUKIO) & SUGIMOTO (TOSHIKO) read SUGIMURA (YUKIO) & SUGIMURA (TOSHIKO)</i>	
63R	19
<i>Add M. before J. Gallagher</i>	
68R	20*
<i>Add, β 97°49' $\pm$ 30° after A</i>	
71L	5
<i>For epsomite read epsomite</i>	
88L	12*
<i>For Fuba read Tuba</i>	
90L	20
<i>For deformation read deformation</i>	
101L	4*
<i>For Kasi read Kasai</i>	
107L	17
<i>For alhali read alkali</i>	
124L	12*
<i>For pp. 365-378 read pp. 265-278</i>	
127L	8
<i>Add [PEROZIO (G. N.)] after PEROZIO (G. I.)</i>	
140L	6*
<i>For Gondongri read Goldongri</i>	
142L	1*
<i>For 16-000 read 16-172</i>	
151R	11*
<i>For carboniferous limestone read Carboniferous Limestone</i>	
155L	4*
<i>For Thet ransformation read the transformation</i>	
172L	8*
<i>For 16-143 read 16-142</i>	
178R	2 }
182R	2 }
<i>For T. A. Burov read T. A. Burova</i>	
182R	23
<i>For A. V. Bykov read A. V. Býkova</i>	
202R	1
<i>For Sidney read Sydney</i>	

Mineralogical Abstracts, vol. 16. (contd.).	
PAGE	LINE
211L	8*
<i>For sider- read sidero-</i>	
222L	19*
<i>For ASWATHNARAYANA read ASWATHANARAYANA</i>	
269L	3
<i>For intrusive read intrusive</i>	
269R	4
<i>For Kazakhstan read Kazakhstan</i>	
271L	21
<i>For Kyzultau read Kÿzyłtau</i>	
277L	5*
<i>For o read of</i>	
278R	16
<i>For B. Brunn read B. Bruun</i>	
281L	19*
<i>Add [LEONOVA (T. N.)] after LEONOVA (T. I.)</i>	
283	page
285	heading }
283L	8 }
<i>For MINERAL DATA read NEW MINERALS</i>	
<i>For Котупьскит read Котульскит: for Минерапо read Минерало</i>	
283L	10 }
285R	19* }
<i>For Эап read Зап</i>	
294L	6*
<i>For gneises read gneisses</i>	
299R	25*
300L	3, 12 }
<i>For analysis read analyses</i>	
301R	20
<i>For Pilanesburg read Pilanesberg</i>	
304L	17*
<i>For 177-142 read 177-242</i>	
306R	23*
<i>For evel read level</i>	
320L	3
<i>For Columbia read Colombia</i>	
330R	7*
<i>For Gierzyn read Gierczyn</i>	
334L	12*
<i>For CAMERON (E. C.) read CAMERON (E. N.)</i>	
356L	2-3
<i>For calcium, silicates read calcium silicates</i>	
356R	2*
<i>For metekaolin read metakaolin</i>	
357L	7
<i>For BRINDLEY (G. S.) read BRINDLEY (G. W.)</i>	
358R	11
<i>For Al₂O₂ read Al₂O₃</i>	
384L	10*
<i>For hornblende. read hornblende-</i>	
384R	1
<i>For o read of</i>	
386R	8*
<i>For Ledvica read Levica</i>	
395L	4*
<i>For Melamorphism read Metamorphism</i>	
399R	16
<i>For exactions read excavations</i>	
403L	22*
<i>For MATVEYVA read MATVEYEVA [MATVEEVA]</i>	
413L	2
<i>Add, 483 after 435.</i>	
—	3
<i>Add 462, before 463</i>	
435R	19*
<i>For fe spar read feldspar</i>	
438L	21
<i>For rhoducites read rhodusites</i>	
442L	14
<i>Add [RAZENKOVA] after RAZENKOV</i>	
447L	15*
<i>For Shassini read Chassigny</i>	
453R	19
<i>For DONALD E. read DONALD E.</i>	
457L	1
<i>For (A.I.) read (A.I.)</i>	
—	4 }
458R	20 }
<i>For Всесоюз read Всесоюз</i>	
458L	9
<i>For hydromorphite read hemimorphite</i>	
465L	24*
<i>Add in before alkaline</i>	
468R	17*
<i>For P. Blut read P. Blot</i>	
495L	11*
<i>For Podoiia read Podolia</i>	
496L	19*
<i>For Mochegora read Monchegora</i>	
506L	22*
<i>For M.M. 16-528 read M.M. 33-528</i>	
507L	15*
<i>For M.M. 16-531 read M.M. 33-531</i>	
521L	18
<i>For Dominions Reefs read Dominion Reefs</i>	
541L	2
<i>For BaO 75.20 read BaO 75.26</i>	
543L	19
<i>For Brittany read Brittany</i>	
546R	21
<i>For GOUDEFROY read GAUDEFRY</i>	
552L	3*
<i>For natroniobate read natroniobite</i>	
552R	9
<i>For natroniobate read natroniobite</i>	
558R	22
<i>For TIKHONONKOV read TIKHONENKOV</i>	
560L	25
<i>For Hartz read Harts</i>	
601R	6*
<i>For ron read iron</i>	
629R	14*
<i>For CHUNG (C. J.) read CHUNG (C.-J.)</i>	
631L	13
<i>Add [EREMENKO] after YEREMENKO</i>	
632L	25
<i>For catapleite read catapleite</i>	
634R	3*
<i>For Plaeozoic read Palaeozoic</i>	
638L	19*
<i>Add iron before meteorites</i>	
659R	13*
<i>For 107 read 109</i>	
672R	17*
<i>Add, 1963 after Pavia</i>	

ORGANIZATION OF ABSTRACTS

Arising from a decision taken at the meeting of the INTERNATIONAL MINERALOGICAL ASSOCIATION in Copenhagen in 1963, the Mineralogical Societies of America and Great Britain agreed to issue a joint statement to National Societies adhering to the Association inviting each Society to organize contributions of abstracts of papers published in the journals of its country on subjects relevant to *Mineralogical Abstracts*. This invitation was issued and has brought a gratifying response. Members of Societies which have agreed to co-operate in this way are entitled to receive *Mineralogical Abstracts* for their personal use at a reduced rate of subscription on application which must be made through their National Society. The countries now co-operating include: AUSTRALIA, AUSTRIA, BELGIUM, BULGARIA, CANADA, CZECHOSLOVAKIA, DENMARK, EGYPT, FINLAND, GERMANY, INDIA, ISRAEL, ITALY, JAPAN, NETHERLANDS, NEW ZEALAND, NORWAY, PAKISTAN, SPAIN, SWEDEN, SWITZERLAND. Individual mineralogists and petrologists in countries not represented in the Association, or not yet co-operating through their National Society, provide abstracts from the literature of ARGENTINA, BRAZIL, KENYA, MEXICO, and SOUTH AFRICA.

ABBREVIATIONS USED IN REFERENCE TO PUBLICATIONS

Abhdl.	Abhandlungen	Mat., Math.	Mathematical, & <i>equiv.</i>
Abstr.	Abstract-s	Medd.	Meddelelser
Abt.	Abteilung	Mem., Mém.	Memoir, -s, & <i>equiv.</i>
Acad., Accad., Akad.	Academy, & <i>equiv.</i>	Metall.	Metallurg-ical, -y
Adv.	Advancement	Min.	Mineralog-ical, -ist, -y
Agric.	Agricultur-al, -e	Misc.	Miscellaneous
Anal.	Analy-st, -tical, &c.	Mitt.	Mitteilungen
Ann., An.	Annals, Anales, & <i>equiv.</i>	Mus., Muz.	Museum, & <i>equiv.</i>
Anorg.	Anorganisch	Nac., Nat., Naz.	National, & <i>equiv.</i>
Appl.	Applied	Natur.	Natur-al, -alist, & <i>equiv.</i>
Arch.	Archives	Natur-w, -v.	Naturwissenschaft, & <i>equiv.</i>
Asoc., Assoc.	Association, & <i>equiv.</i>	Obraz.	Obrazovanie=education
Astron.	Astronomical	Obshch.	Obshchestva=society
Bd.	Band	Petr.	Petrolog-ical, -y, & <i>equiv.</i>
Beitr.	Beiträge	Petrol.	Petroleum
Ber.	Bericht-e	Phil.	Philosophical, &c.
Berg.	Bergwesen	Photos.	Photographs
Bol., Boll., Bull.	Bulletin, & <i>equiv.</i>	Photomicros.	Photomicrographs
Bur.	Bureau	Phys.	Physic-al, -s, & <i>equiv.</i>
Ceram.	Ceramic, & <i>equiv.</i>	Pl(s).	Plate(s)
Chem., Chim.	Chem-i-cal, -stry, & <i>equiv.</i>	Polytech.	Polytechnic, & <i>equiv.</i>
Cien.	Ciencia, -s	Pract., Prakt.	Practical, & <i>equiv.</i>
Circ.	Circular	Proc.	Proceedings
Cl.	Classe	Prosp.	Prospecting
Com.	Comisión	Publ.	Publication(s), published
Comm.	Commission	Rasv.	Razvedka=survey
Conf.	Conference, & <i>equiv.</i>	Rec.	Records
Congr.	Congress, & <i>equiv.</i>	Ref.	References, referata
Contr.	Contributions	Rend.	Rendiconti
C.R.	Comptes Rendus	Repb.	Republic
Crist., Cryst.	Crystallograph-ical, -y, & <i>equiv.</i>	Rept.	Report(s)
Dept.	Department, & <i>equiv.</i>	Res.	Research
Diss.	Dissertation	Reserv.	Reserves
Divn.	Division	Resrcs.	Resources
Dokl.	Doklady=C.R.	Rdsch.	Rundschau
Econ.	Economic	Roy.	Royal, & <i>equiv.</i>
Educ.	Education	Sborn.	Sbornik=magazine
Eng.	Engineering	Sch.	School, Schule
Exped.	Expedition	Sci.	Science
Exper.	Experimental	Sect.	Section
Expl.	Exploration	Sedim.	Sedimentary
Fac.	Faculty	Ser., sér.	Series, & <i>equiv.</i>
Fig(s).	Figure(s)	Serv.	Service
Fis.	Fisicale, fisico	Sitzb.	Sitzungsbericht
Fören.	Föreningen	Skr.	Skrift, -en, -er
Förh.	Förhandlinger	Soc.	Society, & <i>equiv.</i>
Fortsch.	Fortschritt, -e	Sondbd.	Sonderband
Gen.	General	Spec., spez.	Special, & <i>equiv.</i>
Geol., géol.	Geolog-y, -ical, -ist, & <i>equiv.</i>	Stand.	Standard(s)
Gesell.	Gesellschaft	Stn.	Station
Geo-chem., -chim.	Geochem-i-cal, -stry, &c.	Suppl.	Supplement
Geophys., gefis.	Geophysic-al, -s	Surv.	Survey, -or
Govt.	Government	Symp.	Symposium
Hdbh.	Handbuch	Tab(s).	Table(s), tabellen
Illustr.	Illustrat-ed, -ions	Techn.	Technolog-ical, -y
Imp.	Imperial	Tids(s)kr.	Tids(s)krift, -en
Industr.	Industr-ial, -y	Tijdschr.	Tijdschrift
Inform.	Information	Trab.	Trabajos
Inst.	Institute, institution, & <i>equiv.</i>	Trans.	Transactions
Instr.	Instruments	Transl.	Translat-ed, -ion
Int.	Interior	Uch.	Uchennye=learned
Intern.	International	Ucheb.	Uchebnyi=teaching
Invest.	Investigations	Unders.	Undersögelse, undersökning
Issl.	Issledovaniye=investigation	Univ.	University, & <i>equiv.</i>
Ist.	Istituto	Verhdl.	Verhandlungen
Izd.	Izдание=publication	Vidensk.	Videnskaps
Izvest.	Izvestiya	Volc., Vulk.	Volcanolog-ical, -y, &c.
Jahresb.	Jahresbericht	Vses.	Vsesoyuznyi=All-Union
Jahrb.	Jahrbuch	Vyssh.	Vysshikh=higher
Jorn., Journ.	Journal, & <i>equiv.</i>	Wiss.	Wissenschaft
Khim.	Khim-ie, &c.	Zap.	Zapiski=memoirs
Kl.	Klasse	Zav.	Zavodskaya=factory
Krist.	Kristallographie, &c.	Zaved.	Zavedenii=institution
Lab.	Laboratory	Zeits.	Zeitschrift
Lit.	Literary	Zhurn.	Zhurnal=journal
Mag.	Magazine	Ztg.	Zeitung

ABBREVIATIONS AND SYMBOLS

used in the text of abstracts

M.M. .. Mineralogical Magazine : M.A. .. Mineralogical Abstracts : A.M. .. American Mineralogist

CHEMICAL & PHYSICAL-CHEMICAL

cation-exchange-capacity	c.e.c.
differential thermal analysis	d.t.a.
equivalent U_3O_8	eU_3O_8
ethylenediaminetetra-acetic acid ..	EDTA
heat of formation (absolute temperature subscript)	ΔH_f
ionic potential, e.g.	pH
insoluble residue	insol. res.
isotopes, e.g.	^{40}Ar , ^{40}K
loss on ignition	ign. loss
milliequivalent	me.
microgramme	μg
million-years	m.y.
not determined	n.d.
not found	nt. fd.
not present	nil
parts per million	p.p.m.
strength of solution, normal	N
— — — molar	M
substances in ionic state	
anions, e.g.	Cl^- , SO_4^{2-}
cations, e.g.	K^+ , Fe^{3+}
valency, e.g.	Cl^I , Fe^{II} , Fe^{III}

CRYSTALLOGRAPHIC & STRUCTURAL

Ångstrom unit (10^{-8} cm)	Å
crystal axes	a , b , c
— face indices	(hkl)
— form indices	{hkl}
— zone indices	[hkl]
indices of X-ray diffractions	hkl
intensity, ...	I
— relative	I/I_0
interplanar spacing	d
mica structural polymorphs	$1M_1$, $2M_1$
Siegbahn units	kX
space group. These words will be written in full	
unit cell, formula units	Z
— — repeat distances	a , b , c
— — reciprocal lattice lengths of edges	a^* , b^* , c^*
— — interaxial angles	
direct lattice	α , β , γ
— — — reciprocal lattice	α^* , β^* , γ^*

OPTICAL

dispersion, e.g.	$r > v$
extinction angle, e.g.	$\gamma : c$
optic axial angle	$2V$
— — plane	O.A.P.
refractive index (indices), in text ..	refr. ind.
— — of isotropic mineral	n
refractive indices	
of uniaxial mineral	ω , ϵ
of biaxial mineral	α , β , γ
sign of biaxiality	
negative	— or $2V_\alpha$
positive	+ or $2V_\gamma$

PHYSICAL (other)

calorie	cal
calorie, large	kcal
cycles per second	c/s
degree centigrade	$^{\circ}C$
density	D (quote units)
— , relative, e.g.	$D_{\pm}^{20}$
gramme	g
hardness	H.
melting-point	m.p.
micron (10^{-4} cm)	μ
millimicron (10^{-7} cm)	$m\mu$
pounds per square inch	lb/in ^{2}
soluble	sol.
specific gravity, terms of reference not known	sp. gr.
wavelength	λ

SYMBOLS

approximately equal to	$\approx$ or $\sim$
equal to	$=$
not equal to	$\neq$
equal to or greater than	$\geq$
equal to or less than	$\leq$
greater than	$>$
not greater than	$\nlessgtr$
less than	$<$
not less than	$\nlessgtr$
proportional to	$\propto$
per cent.	%
per mille, per mil.	‰
parallel to	$\parallel$
perpendicular to	$\perp$